Our Reference: DFS-146-A PATENT

AF/Appeal

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Applicant:	Rainer Mangold et al.
Serial Number:	10/089,561
Filing Date:	05/28/2002
Examiner/Art Group Unit:	Pierce/1771
Title:	Composite Material for Producing a Layer of Hygiene Article that Comes into Physical Contact with the Body and a Corresponding Hygienic Article

Board of Patent Appeals and Interferences
United States Patent and Trademark Office
PO Box 1450
Alexandria, VA 22313-1450

CERTIFICATE OF MAILING AND TRANSMITTAL LETTER

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450 Transmitted with this document is a Postcard; Appeal Brief and Check in the amount of $340.00 in the above-identified application.

X No additional fee is required.

X A check in the amount of $340.00 is attached.

_ Charge $.00 to Deposit Account Number 25-0115.

X Please charge any deficiency or credit any excess in the enclosed fees to Deposit Account Number 25-0115.

_ Applicant(s), and the Assignee (if applicable), hereby assert a claim to small entity status under 37 CFR 1.27 et. seq.

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Commissioner for Patents, PO Box 1450, Alexandria, VA 22313-1450, on December 7, 2004.

Denise M. Glassmeyer
Attorney for Applicant
Registration No.31,831
(248) 649-3333

YOUNG & BASILE, P.C.
3001 West Big Beaver Road
Suite 624
Troy, MI 48084-3107

Our Reference: DFS-146-A PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Applicant:	Rainer Mangold et al.
Serial Number:	10/089,561
Filing Date:	05/28/2002
Examiner/Art Group Unit:	Pierce/1771
Title:	COMPOSITE MATERIAL FOR PRODUCING A LAYER OF HYGIENE ARTICLE THAT COMES INTO PHYSICAL CONTACT WITH THE BODY AND A CORRESPONDING HYGIENIC ARTICLE

APPEAL BRIEF

Board of Patent Appeals and Interferences
United States Patent and Trademark Office
PO Box 1450
Alexandria, VA 22313-1450

Sir:

Please enter the following Appeal Brief in the appeal filed October 8, 2004.

REAL PARTY IN INTEREST

The real party in interest is Paul Hartmann AG by assignment from the inventors, Rainer Mangold, Krysztof-Daniel Malowaniec and Petra Eckel.

RELATED APPEALS AND INTERFERENCES

None.

STATUS OF CLAIMS

Claims 1-19 are pending. No claim has been allowed. This is an appeal from the final rejection of claims 1-19.

STATUS OF AMENDMENTS

The amendment under 37 C.F.R. 1.116 submitted on September 8, 2004 was entered by the Patent Examiner.

SUMMARY OF THE CLAIMED SUBJECT MATTER

As outlined in claim 1 and claims depending therefrom, the present subject matter is directed to a composite material for producing a layer of a disposable absorbent hygienic article that comes into physical contact with the body (Specification, paragraphs 1 and 32). The composite material is made of at least two nonwoven material layers (4, 5) (see Figure 1 and Specification, paragraph 32) joined by thermal processing (Specification, paragraph 10). The upper layer configured for physical contact with the body is formed of a mixture of mono-component fibers and bi-component fibers with the proportion of bi-component fibers amounting to 30 to 70 percent by weight of the upper layer. The denier of the fibers in the upper layer being at most 3.5 dtex (see Specification, paragraph 9). The lower layer includes at least 40 percent by weight of bi-component fibers having a higher melting component. The higher melting component is made of PET (see Specification, paragraph 9). The lower melting component of the bi-component fibers of the lower layer has a melting point lower than that of the mono-component fibers of the upper layer (see Specification, paragraph 9). The denier of the bi-component fibers of the lower layer is between 4 and 10 dtex (see Specification, paragraph 9).

The claimed subject matter set forth in claim 15 is directed to an absorbent hygienic article 10 with a fluid-tight layer that is not in contact with the body during use (see Specification, paragraph 21). The fluid-tight layer is depicted in Figure 2 at reference numeral 12. The absorbent hygienic article also includes a retaining element 14 and a fluid-permeable layer 16 furnished on a side of the retaining element 14 in physical contact with the body (see Paragraph 21). The layer furnished on the fluid-permeable side of retaining element 16 in physical contact with the body comprises a composite material made in accordance with previously enumerated claim 1.

The claimed subject matter set forth in independent claim 16, is directed to an absorbent hygienic article 10 having a fluid-tight layer 12 not in contact with the body during use. The article 10 has a retaining element 14 and a fluid-permeable layer 16 provided on the side of the retaining element in physical contact with the body. The retaining element 14 includes one layer of intra-linked cellulosic fibers with a fluid retention value that is derived from the quotients of mass (g_{Fl}) of the fluid absorbed and the dry mass (g_{Fiber}) of the cellulose fibers, and is between 0.6 and $0.9 g_F/g_{Fiber}$ where the layer of intra-linked cellulose fibers contains 8 to 15 percent by weight of superabsorbent materials. (See Specification, paragraph 22.) The fluid permeable layer 16 provided on the side of the retaining element 14 in physical contact with the body is at least double-layered. (See Specification, Paragraph 22 and Fig. 2.) An upper layer of the double layers consists of fibers with a denier of at most 3.5 dtex, while a lower layer comprises bi-component fibers with a denier of between 4 and 10 dtex. The higher melting component of the bi-component fibers is made of PET. (See Specification, paragraph 22.)

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The separate rejections presented for review in this appeal are:

1. Claims 1, 4, 5, 7-10, 14 and 15 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Newkirk (U.S. Patent No. 4,883,707).

2. Claims 1, 4-10, 12-15 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Barge et al. (U.S. Patent No. 5,989,688).

3. Claims 2 and 3 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Newkirk in view of Weinbarger (U.S. Patent No. 5,057,357).

4. Claims 2 and 3 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Barge et al. in view of Weinbarger.

5. Claim 6 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Newkirk in view of Barge et al.

6. Claim 11 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Newkirk in view of Lloyd et al. (U.S. Statutory Invention Registration No. H1698).

7. Claim 11 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Barge et al. in view of Lloyd et al.

8. Claims 16-19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Newkirk in view of Hermann (DE 4,338,327).

9. Claims 16-19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Barge et al. in view of Hermann.

GROUPING OF CLAIMS

The claims do <u>not</u> stand or fall together.

ARGUMENT

TABLE OF CONTENTS

I. Claims 1, 4, 5, 7-10, 14, and 15 are improperly rejected under 35 U.S.C. § 102(b) as being anticipated by Newkirk.

The Appellants' invention as set forth in claims 1, 4, 5, 7-10, 14 and 15 is directed to a composite material for producing a layer of a disposable, absorbent, hygienic article that comes into contact with the body. The composite material is made of at least two nonwoven material layers joined by thermal processing. The upper layer, configured for physical contact with the body, is formed of a mixture of mono-component fibers and bi-component fibers. The percentage of bi-component fibers in the upper layer amounts to 30 to 70 percent by weight of that layer. The denier of the fibers in the upper layer is, at most, 3.5 dtex. The lower layer includes at least 40 percent by weight of component fibers having a higher melting component made of polyethylene terephthalate (PET). The lower melting component of the bi-component fibers in this lower layer has a melting point lower than that of the mono-component fibers in the upper layer. The denier of the ***bi-component fibers*** in the lower layer is between 4 and 10 dtex (see Claim 1).

As defined in dependent claims, the surface weight of the upper layer is about 10 to 30 grams/meter^2 (see claim 4), or, more specifically, about 15-20 grams/meter^2. (See claim 5).

More specifically, the material defined in claim 1 has a lower layer that comprises at least 60 percent by weight bi-component fibers whose higher melting component is made of PET (claim 7), or more specifically, at least 80 percent by weight PET (see claim 8). Even more specifically, the lower layer of the composite layer can consist of 100 percent of bi-component fibers having a denier between 4 and 10 dtex whose higher melting component is made of PET (see claim 9).

The invention as set forth in claim 1 can also specifically include bi-component fibers in the lower layer having a denier between 4 and 10 dtex with polyethylene terephthalate as the higher melting component in the form of a sheath/core fiber (see claim 10). It is also set forth

that the composite material defined in claim 1 can include bi-component fiber having a lower melting component present as at least 40 percent by weight polyethylene (see claim 14).

The claimed invention as set forth in independent claim 15 is directed to an absorbent, hygienic article with a fluid-tight layer that is not in contact with a body during use. The retaining element and the fluid-permeable layer are furnished on a side of the retaining element in physical contact with the body. The absorbent, hygienic article includes a retaining element and a fluid-permeable layer furnished on a side of the retaining element in physical contact with the body. The layer furnished on the fluid-permeable side of the retaining element in physical contact with the body includes a composite material constructed in accordance with claim 1.

In the Office Action of June 9, 2004, claims 1, 4, 5, 7-10, 14, and 15 were finally rejected under 35 U.S.C. § 102(b) as being anticipated by Newkirk (US Patent No. 4,883,707). The Examiner indicated that Newkirk disclosed a nonwoven fabric comprising a carded web layer having an average denier of 3 or greater bonded to a thermoplastic fibrous layer having an average denier of 3 or less (citing Newkirk, column 2, lines 39-44). The Examiner further indicated that the low denier layer meets the present claim limitations for the upper layer because the claimed range of at most 3.5 dtex falls within "less than 3 denier". The Examiner also indicated that the lower denier layer of Newkirk comprises bi-component fibers with optionally 30 percent single component fiber (citing Newkirk, column 3, lines 42-55).

The Examiner also indicated that the high denier layer of Newkirk meets the Appellants' claim limitations for the lower layer because the claimed range of between 4 and 10 dtex falls within the range of "greater than 3 denier". The Examiner is silent regarding the present claim limitation that the bi-component fibers of the lower layer are characterized as having a denier between 4 and 10. It is not clear to the Appellants where the Newkirk reference provides support for this limitation. The Examiner does contend that the Newkirk reference teaches bi-component fibers with the higher melting component being made of PET (citing Newkirk, column 3, lines 20-34).

The Examiner also observed that the lower melting point part of the bi-component fibers of Newkirk are the only ones that melt. Based upon this observation, the Examiner concludes that the lower melting point part of the bi-component fibers would have a lower melting point than the mono-component fibers (citing Newkirk, column 4, lines 2-6). The location of the mono-component fibers in the Newkirk construction is unspecified.

With regard to claims 4 and 5, the Examiner indicated that Newkirk disclosed the low denier layer as having a basis weight in the range of 5 to 20 grams/yard^2 (citing column 2, line 59). With regard to claims 7-9, the Examiner indicated that the Newkirk reference discloses that the high denier layer may be comprised entirely of bi-component fibers (citing Newkirk, column 3, lines 4-7). With regard to claim 10, the Examiner indicated that the Newkirk reference stated that the fiber may be sheath/core (citing Newkirk, column 3, line 6). With regard to claim 14, the Examiner indicated that the lower melting point component may be polyethylene (citing Newkirk, column 3, line 25). With regard to claim 15, the Examiner indicated that the cover stock disclosed by Newkirk can be used with an absorbent layer and an impermeable outer covering (citing Newkirk, column 1, lines 15-18).

A. Claim 1 is patentable in view of the Newkirk reference.

The Appellants' invention as set forth in claim 1 is a composite material for producing a layer of a disposable absorbent hygiene article that comes into contact with the body. The composite material is made up of at least two layers of nonwoven material. The two nonwoven layers are joined by thermal processing.

The upper layer is configured for physical contact with the body and is formed of a mixture of two separate elements: mono-component fibers and bi-component fibers. This upper layer contains a percentage of bi-component fibers amounting to 30 to 70 percent by weight of the upper layer. Thus the upper layer also contains mono-component fibers in amounts between 30 and 70 percent by weight. The denier of the fibers of the upper layer, that is the denier of both mono-component fibers and bi-component fibers is, at most, 3.5 dtex.

The lower layer of the composite material includes at least 40 percent by weight of bi-component fibers having a higher melting component made of PET. The bi-component fibers in the lower layer have a lower melting component selected so that the lower melting point is lower than that of the mono-component fiber portion of the upper layer. The denier of the specifically *bi-component fibers* of the lower layer is between 4 and 10 dtex.

The Newkirk reference is directed to a nonwoven fabric having a high loft cover stock "composed of a carded web layer comprising crimped thermoplastic fibers having an average denier of 3 or greater." (Newkirk, column 2, lines 39-42). The Examiner considers this layer to correspond to the lower layer of claim 1.

The high loft cover stock has a carded web layer bonded to it. The bonded layer is composed of "thermoplastic fibers having an average denier of 3 or less." (Newkirk, column 2, lines 42-45.) The bonded layer corresponds to the upper layer in claim 1.

The Newkirk reference specifies that any type of bi-component fibers can be used in the manufacture in the high loft nonwoven fabric (Newkirk, column 3, lines 4 to 6). The Newkirk reference teaches that neither layer need be composed entirely of the bi-component fibers. Single component fibers can be added (Newkirk, column 3, lines 43-48). However, "*addition of greater than 25-30 percent matrix fiber may reduce the strength to a level of concern for use as a traditional diaper topsheet.*" (Newkirk, column 3, lines 49-52, emphasis added.) Thus it is submitted that the Newkirk reference directs the skilled artisan away from using nonwoven layers containing greater amounts of mono-component fibers. In contrast, the invention as set forth in claim 1 specifies that the upper layer contains a percentage of mono-component fibers in amounts of 30 percent or greater in direct contradiction to the teaching of Newkirk.

Furthermore, the Newkirk reference specifies that the preferred bi-component fibers

> . . . are the composites wherein the bi-component fibers in the carded web *layers* are selected from the group consisting of sheath/core fibers of the following combinations in polyethylene/polypropylene, polyethylene/polyester, polypropylene/polyester, and copolyester/polyester. Specific examples of such fibers are *1.7 and 3 denier* polyethylene/polyester sheath/core fibers available from BASF CORPORATION as products 1051 and 1050, respectively; *2 and 3 denier* copolyester/polyester/sheath/core fibers available from CELANESE fibers as type 354; and *1.5 and 3 denier* polyethylene/polypropylene sheath/core fibers available from CHORI AMERICA as DAIWABO NBF TYPE H. (Newkirk, column 3, lines 20-34, emphasis added.)

The Newkirk reference specifically teaches that bi-component materials for both layers have a denier less than 3. The Newkirk reference does not teach or disclose a construction in which the lower layer contains at least 40 percent bi-component fibers having a denier of 4 to 10 dtex. Instead, the Newkirk reference provides teaching of bi-component fibers of 3 dtex or less.

The Newkirk reference at column 2, lines 35-50 does state that "thermoplastic fibers having an average denier of 3 or greater are employed in the high loft layer." The reference does not teach or suggest that these thermoplastic fibers are strictly limited bi-component fibers. Bi-component materials are, by specification definition, limited to materials having a denier of 3 or less, as set forth in column 3, lines 20-34. Thus other materials must be present to provide average denier greater than 3. In contrast, the present invention as set forth in claim 1 is directed to a composite material in which the upper layer is formed of a mixture of mono-component fibers and bi-component fibers specifically formulated such that the percentage of bi-component fibers amounts to 30 to 70 percent by weight of the upper layer, with the remainder being mono-component fibers. The denier of the fibers of the upper layer is at most 3.5 dtex. It is respectfully submitted that the Newkirk reference fails to teach or suggest the upper configuration in a composite material set forth in claim 1.

The Newkirk reference further specifies that the lower or bonded layer comprises "thermoplastic fibers having an average denier of 3 or less." (Newkirk, column 2, lines 44-45.) As previously indicated, the Newkirk reference teaches the use of low denier bi-component fibers

in the lower layer (see Newkirk, column 3, lines 20-34). Thus the Newkirk reference lacks any teaching or suggestion of using bi-component fibers having a denier of 4 to 10 dtex in the lower layer.

For these reasons, it is submitted that claim 1 is not taught, anticipated, or rendered obvious by the Newkirk reference and that claim 1 has been improperly rejected under 35 U.S.C. § 102(b). Reversal is requested.

B. Claims 4 and 5 are patentable in view of Newkirk.

Claims 4 and 5 depend either directly or indirectly from claim 1. Claims 4 and 5 contain all of the limitations found therein. By this dependency, claims 4 and 5 are not taught, anticipated, or rendered obvious by the Newkirk reference for the reasons discussed previously in conjunction with claim 1. Reversal of the rejection of claims 4 and 5 under 35 U.S.C. § 102(b) is sought.

C. Claims 7-9 are patentable over the Newkirk reference.

Claims 7-9 depend from claim 1 either directly or indirectly to contain all of the limitations found therein. Thus, the analysis previously presented with respect to claim 1 is reiterated at this point. Additionally, the Examiner states that the Newkirk reference discloses that the high denier layer may be comprised entirely of bi-component materials citing Newkirk, column 3, lines 4-7. The Newkirk reference states:

> Any type of thermoplastic bi-component fibers can be used in the manufacture of the high-loft nonwoven fabrics of this invention. (Newkirk, column 3, lines 4-7).

The Appellants respectfully contend that this statement, without more, fails to teach or suggest that a material can be composed entirely of bi-component fibers. Indeed, it is submitted that a careful reading of the Newkirk reference yields no teaching or suggestion of the percentage of bi-component fibers set forth in either claims 7, 8, or 9. Additionally, careful reading of the Newkirk reference directs the skilled artisan to a PET bi-component fiber having a denier of 3 or less. The

present invention as set forth in claims 1, 7, 8, and 9, is directed to a composition in which the bi-component fibers in the lower layer have a denier of 4 to 10. Thus, it is submitted that the Appellants' invention, as set forth in claims 7, 8 and 9, is not taught, anticipated, or rendered obvious by the Newkirk reference. Reversal of the rejection of these claims is requested.

D. Claim 10 is patentable over the Newkirk reference.

Claim 10 depends from claim 1 to specify that the bi-component fibers of the lower layer with PET as the higher melting component is a sheath/core fiber. The Examiner indicates that the Newkirk reference states that fiber may be sheath/core, citing column 3, line 6.

It should be noted that the Newkirk reference further states that sheath/core fibers having deniers of 3 or less are employed in the construction disclosed therein. Such materials are outlined in Newkirk at column 3, lines 20-34. The Newkirk reference lacks any teaching or suggestion of bi-component sheath/core fibers having a denier of 4 to 10. Thus, it is submitted that the Appellants' invention as set forth in claim 10 is not taught, anticipated, or rendered obvious by the Newkirk reference. Reversal of the rejection of claim 10 in view of this reference is requested.

E. Claim 14 is patentable over the Newkirk reference.

Claim 14 depends from independent claim 1 to specify that the lower melting component of the bi-component fiber present in an amount of at least 40 percent by weight in the lower layer is polyethylene. It is the Examiner's position that the Newkirk reference teaches that the lower melting component may be polyethylene, and cites column 3, line 25 for this proposition.

The Newkirk reference states that "the bi-component fibers in the carded web layers are selected from the group consisting of sheath/core fibers of . . .polyethylene/polyester. . . . Specific examples of such fibers are 1.7 and 3 denier polyethylene/polyester sheath/core fibers. (Newkirk, column 3, lines 21-27).

The Newkirk reference lacks any teaching or suggestion of bi-component fiber material present in an amount of at least 40 percent having a denier of 4 to 10 dtex, in which the lower melting component is polyethylene. In contrast, the reference specifically directs the artisan to polyester bi-component fibers having a denier between 1.7 and 3. Thus, it is submitted that the Appellants' invention as set forth in claim 14 is not taught, anticipated, or rendered obvious by the Newkirk reference. Reversal of this rejection is requested.

F. Claim 15 is patentable over the Newkirk reference.

The Appellants' invention as set forth in claim 15 is directed to an absorbent hygienic article having a fluid-tight layer that is not in contact with a body during use. The article also includes a retaining element and a fluid-permeable layer furnished on a side of the retaining element in physical contact with the body. The layer furnished on the fluid permeable side of the retaining element in contact with the body includes a composite material having an upper layer for physical contact with the body formed of a mixture of mono-component fibers and bi-component fibers in which the percentage of bi-component fibers amounts to 30 to 70 percent by weight of the upper layer. The denier of the fibers in the upper layer is, at most, 3.5 dtex. The composite material also includes a lower layer having at least 40 percent by weight bi-component fibers whose higher melting component is PET and whose lower melting component has a lower melting than that of the mono-component fibers of the upper layer. The denier of the bi-component fibers of the lower layer is between 4 and 10 dtex. The two nonwoven layers are joined by thermal processing.

The Examiner contends that the Newkirk reference teaches that the cover stock disclosed therein can be used with an absorbent layer and an impermeable outer covering. The Examiner cites Newkirk at column 1, lines 15-18 as supporting this position.

The Newkirk reference at column 1, lines 15-18 specifies that:

> Disposable diapers, sanitary napkins and the like are generally composed of an impermeable outer covering, an absorbent layer, and an inner layer that—ideally—permits liquid to flow through into the rapidly absorbent layer.

While the Newkirk reference may disclose that a cover stock material can be employed in such constructions as disposable diapers, sanitary napkins, and the like, the reference fails to teach or suggest the composite material of the present invention. Instead, the Newkirk reference teaches a nonwoven fabric composed of a carded web material comprising thermoplastic fibers provided the fibers have an average denier of 3 or greater. The cover stock has a carded web layer bonded to the first layer that comprises thermoplastic fibers having an average denier of 3 or less. The Newkirk reference further teaches that addition of greater than 25 to 30 percent matrix fiber is problematic as it can reduce the strength to a level of concern for use as a traditional diaper top sheet. It also fails to teach the use of bi-component fibers having a denier between about 4 and 10 in the lower layer. It is submitted that the Newkirk reference lacks teaching or suggestion of the invention as set forth in claim 15. Indeed, it is submitted that the reference teaches away from the desirability of the construction of the present invention in hygienic articles. Thus, claim 15 is improperly rejected under 35 U.S.C. § 102(b). Reversal of this rejection is requested.

II. Claims 1, 4-10, and 12-15 are improperly rejected under 35 U.S.C. § 103(a) as being unpatentable over Barge et al. (U.S. Patent 5,989,688).

The Appellants invention as set forth in claims 1, 4, 5, 7-10, 14, and 15 is discussed previously in Section **I**. Appellants' invention as set forth in claim 6 is directed to the composite material defined in claim 1 in which the fibers of the upper layer are hydrophilic and made supple to be permanently hydrophilic. The Appellants' invention as set forth in claim 10 is directed to the composite material defined in claim 1 in which the bi-component fibers of the lower layer having PET as the higher melting component are formed as a sheath/core fiber. The invention set forth in claim 12 depends from claim 10 through claim 11 to specify that the sheath/core fiber has a core positioned eccentrically to the longitudinal center direction of the

fiber (claim 11), and a denier of 5-8 dtex (claim 12). Claim 13 further specifies that the denier of the sheath/core fiber is 6 to 7 dtex. Claims 14 and 15 were discussed previously in Section **I**.

The Examiner contends that Barge et al. discloses a composite nonwoven material for controlled acquisition and distribution of liquid that comprises a first support layer and a first bulky layer (citing Barge, Abstract). The Examiner indicates that the support layer may function as the cover stock in an absorbent article (citing column 4, lines 32-39). From this, the Examiner concludes that the support layer would be the body-contacting layer.

The Examiner also indicates that the Barge reference discloses that the support layer fibers preferably have a dtex of 1.7 to 3.3 (citing column 6, line 35). The Examiner indicates that the Barge reference also discloses that the support layer may be made from a mixture of single-component fibers and bi-component fibers (citing column 6, lines 18-28).

The Examiner does indicate that the Barge reference fails to disclose that this mixture comprises 30 to 70 by weight bi-component fibers. The Examiner indicates that discovering the optimum ratio of bi-component fibers to single component fibers would have been an obvious matter of optimizing a result effective variable. The Examiner concludes that the addition of more bi-component fibers in the nonwoven would strengthen the bonding of the fabric at the expense of feel and increased stiffness. No independent reference or support is provided for this conclusion. Thus, the Examiner concludes that it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use 30 to 70 percent bi-component fibers in the support layer of Barge et al. since Barge discloses using a blend of single-component and bi-component fibers, and that it has been held that discovering an optimum value of a result effect variable involves only routine skill in the art (citing *In re Boesch*, 617 F2d, 205 U.S.P.Q . 215 (C.C.P.A, 1980).

The Examiner concludes that the bulky layer meets the limitations of the lower layer because Barge et al. discloses that the fibers are in the range of 5 to 12 dtex (citing column

6, lines 63-64) and may consist essentially of bi-component fibers (citing columns 6, lines 46) that contain PET (citing column 6, lines 7-11).

With regard to claims 4 and 5, the Examiner concludes that the Barge reference discloses that the support layer may weigh between 6 and 20 grams per square meter (column 7, lines 6 to column 8, line 7). With regard to claim 6, the Examiner concludes that the fibers are treated to be hydrophilic, (citing Barge, column 7, lines 38-39). With regard to claims 7-9, the Examiner concludes that the Barge reference discloses that the bulky layer may consist essentially of bi-component fibers (citing column 6, line 46). With regard to claim 10, the Examiner concludes that the fibers may be sheath/core fibers (citing column 7, lines 41-43). With regard to claim 14, the Examiner concludes that the lower melting part may be polyethylene (citing column 6, line 9), and with regard to claim 15, the Examiner contends that Newkirk[sic] discloses hygienic absorbent products that also comprise an absorbent core and an impermeable back sheet (citing column 1, lines 15-23).

A. Claim 1 is patentable over the Barge reference.

The Appellants' invention as set forth in claim 1 is directed to a composite material for producing a layer of a disposable absorbent hygiene article that comes into physical contact with the body. The composite material is made of at least two nonwoven material layers. The upper layer is configured for physical contact with the body. The upper layer is formed of a mixture of mono-component fibers and bi-component fibers. The percentage of bi-component fibers amounts to 30 to 70 percent by weight of the upper layer. Thus the amount of mono-component fibers is 30 percent or greater. The denier of the fibers of the upper layer is, at most, 3.5 dtex.

The composite material also includes a lower layer joined to the upper layer by thermal processing. The lower layer includes at least 40 percent by weight bi-component fibers. The higher melting component of the bi-component fibers is made of PET. The lower melting component of the bi-component fibers of the lower layer has a melting point lower than that of the

mono-component fibers in the upper layer. The denier of the *bi-component fibers* present in the lower layer is between 4 and 10 dtex.

At the outset, it should be noted that the Barge reference corresponds with EP 859 883 B1, which has been cited and discussed in the present specification. As previously indicated at page 2 of the specification, the Barge reference is directed to a plurality of composite materials. The composite materials have at least two layers of nonwoven material and can be used to produce a layer for a hygienic article that comes into contact with the body. The Barge reference is directed to improving the fluid absorption and distribution characteristics of the composite material when used as a top sheet in a hygienic article. Specifically, transfer times and reverse wetting characteristics are of concern in the Barge reference. Two or three-layer composite materials in highly varied combinations of layers are disclosed as part of which synthetic bonding fibers and matrix-forming fibers are utilized. The Barge reference fails to appreciate constructions that can enhance strength and flexibility characteristics of composite materials.

The Barge reference is directed to a composite nonwoven for controlled acquisition and distribution of a liquid. This composite nonwoven comprises a support layer and an underlying bulky layer. The bulky layer functions to acquire and distribute liquid, while the support layer is suitable for use as either a cover stock or a transfer layer. (See generally Barge at column 4, lines 32-43). The Barge reference indicates that the support layer will typically be comprised of synthetic fibers or filaments, such as polypropylene or polyester fibers or filaments, or bi-component fibers, or a mix of synthetic fibers and filaments and cellulosic fibers. Examples of bi-component fibers suitable for use in the Barge reference are listed at column 6, lines 7-11 as polypropylene/polyethylene, polyester/polyethylene, and polyester/copolyester bi-component fibers.

While the Barge reference indicates that the fineness of the fibers in the "various layers" may be varied as required so as to result in a composite nonwoven with desired characteristics in terms of liquid control as well as strength and softness, etc." The Barge reference teaches that the support layer will have fibers or filaments having a fineness in the range

of 1-7 dtex, preferably 1.5 to 5 dtex, and more preferably 1.7 to 4 dtex, such as 1.7 to 3 dtex. Thus the body contacting layer in Barge, rather than having a denier that is at most 3.5 dtex as set forth in claim 1, will have fibers of a fineness ranging between 1 and 7. The Barge reference further teaches that the bulky layer includes bi-component fibers that will typically have a "similar fineness" to that of the upper or support layer. (See Barge, column 6, lines 35-38.) Thus, the Barge reference teaches that the fibers employed in the upper layer will have a fineness equal to the fibers employed in the lower layer.

The present invention set forth in claim 1 is directed to a composite material in which the fineness of fibers differs from upper to lower layer. Without being bound to any theory, it is believed that differences in layer construction contribute to unique and, in at least some instances, superior construction in the claimed invention particularly in matters of construct strength and resiliency. The fineness of the fibers in the upper layer is, at most, 3.5 dtex, while the lower layer contains at least 40 percent bi-component fibers having a denier between 4 and 10 dtex. The Barge reference fails to teach or appreciate the variations in layers found in the present invention. Without being bound to any theory, it is believed that the differences between the denier of fibers in the upper and lower layers of the invention set forth in claim 1 contribute to superior strength and resiliency of the construct of the present invention.

The Barge reference lacks any teaching of careful selection among components found in the present invention. Specifically, the fibers of the upper layer contain 30 to 70 percent bi-component fibers with a denier of 3.5 dtex or less. The lower layer of the construct has at least 40 percent by weight bi-component fibers having a denier of 4 to 10 dtex. The high melting point component of the bi-component fibers in the lower layer is PET, and the low melting point component has a melting point lower than mono-component fibers present in the upper layer. It is believed that this configuration further contributes to the strength of the overall composite structure while maintaining suitable tactile qualities. Utilization of bi-component fibers in the lower layer that have a melt point lower than the melt point of the mono-component fibers of the upper layer result in a composite in which significant bonding exists as bi-component fiber to bi-

component fiber. Without being bound to any theory, it is believed that this contributes to the strength of the resulting construction without unduly compromising tactile qualities and liquid transfer. It is submitted that this feature of claim 1 is not taught, anticipated, or rendered obvious by the Barge reference.

The Barge reference further teaches that "in bulky layers containing both binder fibers and matrix fibers, the majority of the fibers will often be matrix fibers. The percentage of binder fibers in the bulky layer(s) will thus typically be in the range of 10 to 60 percent by weight with lower amounts such as 20 to 40 percent by weight and 25 and 35 percent by weight being more typical. This directs the skilled artisan away from a teaching where the lower layer includes at minimum 40 percent by weight bi-component fibers. Additionally, the Barge reference teaches that the matrix fibers in the bulky layer will typically have a fineness in the range of 1 to 12 dtex. This is in contrast with the binder fibers, which are typically the bi-component fibers of the composition. See Barge, column 6, lines 39-52. The reference is silent regarding the specific denier or fineness of the binder or bi-component fibers.

It should be noted that the Barge reference at column 6, lines 63-64 "a second bulky layer designed primarily for distribution of liquid within the layer, the first bulky layer will typically comprise fibers in the range of about 5 to 12 dtex. . ." This refers to the general fibers rather than specific bi-component fibers. This is readily apparent when this section is read in combination with column 6, lines 35-38. Furthermore, the reference fails to teach or suggest a mixture of mono-component fibers and bi-component fibers, in which bi-component fibers compose 30 to 70 percent of the upper layer. At best, the Barge reference suggests that mono- and bi-component fibers can be "mixed" without suggesting percentages or formulations (see Barge, column 6, lines 23-25). Given the teachings in the previously cited Newkirk reference that mono-component or matrix fiber levels greater than 25 to 30 percent results in compromised topsheet strength, it is submitted that use of mono-component fibers at levels greater than 30 percent in the upper level is considered undesirable and discouraged in the prior art. This is

further supported by the examples set forth subsequently in the Barge specification, in which no example uses any bi-component fibers in the support (upper) layer.

It should also be noted that there is only one mention of use of PET/PE bi-component fibers in the lower layer. (See Example 3b) Where bi-component fibers are used in the bulky layer (lower) layer, the materials are PP/PE fibers of 1.7 dtex at levels well below 20 percent. The Barge reference fails to teach or appreciate that use of bi-component fibers in the lower layer having a low melting component with a melting point below that of the mono-component fibers in the upper layer in amounts greater than 40 percent can provide a functional composite material that provides excellent strength and durability while providing attributes of softness and comfort.

Without being bound to any theory, it is believed that the unique combination of mono-component fibers to bi-component fibers present in the upper layer adjusted for denier of at most 3.5 dtex, together with a lower layer that includes at least 40 percent by weight bi-component fibers having a denier between 4 and 10 dtex, provides a composite material uniquely suited for retaining superabsorbent materials in a hygiene article. Furthermore, by selecting special bi-component fibers with PET as a higher melting component present in an amount of at least 40 percent and having fiber thickness between 4 and 10 dtex, adequate rigidity and resilience of the composite material is obtained as well as outstanding bonding of the fibers to each other. It is respectfully submitted that the Barge reference fails to teach or appreciate these attributes.

It is submitted that the compositions disclosed in Barge are such that thermal processing with a temperature that melts the low-melting polypropylene-type fibers typically employed in the upper layer leading to structural integrity fails to provide a soft and pleasant feeling material. Alternately, thermal processing performed at lower temperatures on material such as disclosed in Barge leads to a very poor integrity of both layers pursuant to one another. Thus, pooling and low structural integrity become significant problems that can be addressed and overcome by the present invention. For these reasons, it is submitted that the Appellants'

invention as set forth in claim 1 is not taught, anticipated, or rendered obvious by the Barge reference. Reversal of this rejection of claim 1 is requested.

B. Claims 4-10, 14, and 15 are unpatentable over the Barge reference.

Claims 4-10, 14, and 15 depend either directly from claim 1 to contain all of the limitations found therein. By this dependency, it is submitted that the Appellants' invention as set forth in claims 4-10 , 14 and 15 is not taught, anticipated, or rendered obvious by the Barge reference for the reasons discussed previously in conjunction with claim 1. Reversal of the rejection of these claims is requested.

C. Claims 11, 12, and 13 are unpatentable over the Barge reference.

Claims 11, 12, and 13 depend either directly or indirectly from claim 10 and ultimately from claim 1. Claims 12 and 13 specify that the denier of the sheath/core fiber used in the bi-component material of the lower layer is 5 to 8 dtex, or 6 to 7 dtex, respectively. It is submitted that the Barge reference fails to appreciate the use of bi-component sheath/core fibers having a denier of such values. The Barge reference teaches that the fineness of fibers of various layers in general are from 1 to 7 dtex and that the various layers will each have fibers of similar fineness. The Barge reference fails to teach or appreciate that careful adjustment of the denier of the sheath/core fiber of the lower layer can result in a composite material having advantageous feel, strength, and liquid transport characteristics. Given this, it is respectfully submitted that the Appellants' invention as set forth in claims 11, 12, and 13, is not taught, anticipated, or rendered obvious by the Barge reference. Reversal of the rejection of claims 11, 12, and 13 is requested.

III. Claims 2 and 3 are improperly rejected under 35 U.S.C. § 103(a) as being unpatentable over Newkirk in view of Winebarger (U.S. Patent No. 5, 057,357).

The Appellants' invention as set forth in claim 2 is directed to the composite material of claim 1 in which the upper layer configured for physical contact with the body has a textured pattern created by calendering in which the percentage of the textured surface

comprising 5 to 30 percent of the total surface. Claim 3 specifies that the percentage of the textured surface comprises 5 to 25 percent of the total surface.

The Examiner indicates that the Newkirk reference discloses pattern bonding through air (citing Newkirk, column 4, lines 13-24), but fails to disclose creating a textured pattern through calendering. The Examiner cites the Winebarger reference as teaching that a softer cover stock may be achieved by calendering the nonwoven and creating a pattern with a bond area of 5.7 to 30 percent (citing Winebarger, column 5, lines 13-16). The Examiner indicates that it would have been obvious to a person having ordinary skill in the art at the time the invention was made to create a textured pattern by calendering the cover stock of Newkirk in order to create a softer material as taught by Winebarger.

The Winebarger reference is directed to a process for producing a thermally-bonded *single-layer* fibrous web for producing a soft, nonwoven cover stock. The process includes formation of a fibrous web having a first face and an opposite second face composed of thermally bondable fibers. This single layer fibrous web is passed through first and second calendering devices that apply heat and pressure to the fibrous web for thermally bonding respective portions of the fibers with a pattern of bond joints.

The Winebarger reference lacks any teaching or suggestion of employing calendering to a composite material having distinct upper and lower layers. The Winebarger reference is directed to a process whereby nonwoven fibers are bonded to one another using a calendering method to provide increased strength with reduced stretch while not adversely affecting softness in single layer material. The Winebarger reference fails to teach or suggest a composite material in which the upper layer for physical contact with the body has a texture created by calendering while the lower layer includes at least 40 percent by weight bi component fibers composed of a high-melting component made of PET, and lower-melting component having a melting point lower than that of mono-component fibers present in the upper layer. The denier of the bi-component fibers in the lower layer is between 4 and 10 dtex.

The Newkirk reference has been discussed previously in Section I. As the Examiner has indicated the Newkirk reference lacks any teaching or suggestion of calendering. It is the Appellants' position that the Newkirk reference fails to provide adequate motivation for combination with the Winebarger reference. The Newkirk reference specifically states that

> [t]he carded web layers as prepared have natural high loft. It is important not to destroy that natural loft in the process of bonding the two layers together. (Newkirk, column 3, lines 66-68).

To this end, thru-air bonding is suggested. Where patterning is desired, thru-air bonding using a wire or drum with a pattern of open and closed areas can be employed. (Barge, column 4, lines 25-27). The calendering operation, outlined in Winebarger, by its nature, destroys loft and thus would contravene the teaching of Newkirk.

Furthermore the Newkirk reference fails to teach or suggest a composite structure in which the upper layer contains 30 to 70 percent by weight bi-component fibers (and consequently 30 percent by weight or greater mono-component fibers) in which the denier of the fibers in the upper layer is at most 3.5 dtex. The Newkirk reference also lacks any teaching or suggestion of a lower layer having 40 percent by weight of bi-component fibers having a denier between 4 and 10 dtex. When calendered, the composite structure of the invention as claimed exhibits melt bonding of the low-melting portion of bi-component fibers, particularly in the lower layer, without concomitant melting of mono-component fibers in the upper layer. Without being bound to any theory, it is believed that this highly localized thermal bonding provides structure exhibiting strength durability not exhibited in the cited references. It is also believed that the composite construction of the present invention having the textured upper layer provides a suitably resilient nonwoven appropriate for retaining super-absorbent materials. It is respectfully submitted that the Newkirk and Winebarger references fail to teach, suggest, or appreciate a composite material having these attributes. Thus, it is submitted that the Appellants' invention as set forth in claims 2 and 3 is not taught, anticipated, or rendered obvious by Newkirk in view of

Winebarger and that the Appellants' invention as set forth in claims 2 and 3 has been improperly rejected under 35 U.S.C. § 103(a).

IV. Claims 2 and 3 are improperly rejected under 35 U.S.C. § 103(a) as being unpatentable over Barge et al. in view of Winebarger.

The subject matter of claims 2 and 3 has been previously discussed in Section **III**. The Examiner cites the Barge reference as disclosing the preferred method of bonding as being thermal bonding using calender bonding (citing column 9, lines 19-22), but failing to disclose forming a textured pattern. The Winebarger reference is cited as teaching that a softer cover stock may be achieved by calendering the nonwoven and creating a pattern with a bond area of 7.5, to 30 percent (citing column 5, lines 13-16). The Examiner concludes that it would have been obvious to a person of ordinary skill in the art at the time of the invention to create a textured pattern by calendering the cover stock of Barge et al. in order to create a softer material as taught by Winebarger.

The Barge reference is discussed in detail in Section II. The Winebarger reference is discussed in detail in Section III. As indicated previously in conjunction with Section II, the Barge reference is concerned with a composite material in which the upper or support layer and the bulky or lower layer are composed of various fibers, all of which have a fineness or denier in the range of 1 to 7 dtex. In contrast, the present invention as set forth in claims 2 and 3 is directed to a composite material in which the denier is carefully modified to provide an upper layer having a denier less than about 3.5 dtex and a lower layer in which the denier of 1 component, namely the bi-component fibers, is carefully regulated to be between 4 and 10 dtex . The composite material has a textured upper layer in which the percentage of the textured surface comprises 5 to 30 percent of the total surface (claim 2) or, more specifically, 15 to 25 percent of the total surface (claim 3). The Winebarger reference lacks any teaching or suggestion of a dual a layer composite having a textured pattern on the upper surface.

Without being bound to any theory, it is believed that the composite material as set forth in claims 2 and 3 of the present invention provides a material of sufficient strength and texture for use in a variety of items such as hygiene devices. The Winebarger reference fails to appreciate that a composite material having texture on its upper surface can provide appropriate feel while yielding a cohesive composite material having superior liquid transport capabilities and resiliency. For these reasons it is submitted that the Appellants' invention as set forth in claims 2 and 3 is not taught, anticipated, or rendered obvious by the Barge reference in view of Winebarger.

The Barge reference is directed to a process and resulting material previously described in whichs the upper supprot layer can be calendered (Barge, column 9, lines 18-22 and subsequently joined to a bulky layer laid on top of it by a nonchemical bonding means such as thermobonding (Barge, column 10, lines 24-36). Thermobonding is preferably by through air methods (Barge, column 10, lines 37-55). The materials are held in place relative to one another during production by means of suction (Barge, column 13, lines 47-56). It can be appreciated that the process outlined in Barge can result in compression of fibers in the support layer compromising loft and softness. In contrast, the component materials and resulting composite se6t forth in claims 2 and 3 provide a material having improved strength characteristics without adversely affecting textile qualities. It is submitted that the teaching of Barge taken alone or in combination with Winebarger directs the artisan away from the structure of the present invention. Thus, it is submitted that claims 2 and 3 are improperly rejected under 35 U.S.C. § 103(a) as being unpatentable over these references.

Additionally, claims 2 and 3 depend from independent claim 1 to contain all of the limitations found therein. By this dependency, it is submitted that the Appellants' invention as set forth in claims 2 and 3 is not taught, anticipated, or rendered by the cited references for the reasons discussed previously in conjunction claim 1 in Section II. Thus, it is submitted that claims 2 and 3 are improperly rejected under 35 U.S.C. § 103(a). Reversal is requested.

V. Claim 6 is improperly rejected under 35 U.S.C. § 103(a) as being unpatentable over Newkirk in view of Barge.

The Appellants' invention as set forth in claim 6 was previously described in Section **II**.

The Examiner contends that the Newkirk reference is applicable but fails to disclose treating the upper layer with a hydrophilic finish. The Barge reference is cited as disclosing that cover stock fabrics are preferably treated to be hydrophilic in order to better acquire and distribute aqueous liquids such as urine (citing column 7, lines 33-35). The Examiner concludes that it would have been obvious to a person having ordinary skill in the art at the time of the invention to provide the top sheet of Newkirk with a hydrophilic finish in order to create a cover stock that can better acquire and distribute aqueous liquids as taught by Barge et al.

The Newkirk reference is discussed in detail in Section I of this Appeal Brief. The Barge reference is discussed detail in Section II of this Appeal Brief. As indicated previously, the cited references failed to teach, suggest, or appreciate a composite material in which the denier of the upper fibers is at most 3.5 dtex and is composed of a mixture of mono-component fibers and bi-component fibers. The composite material of the present invention also includes a lower layer having at least 40 percent by weight bi-component fibers having a denier between 4 and 10 dtex. The Newkirk and Barge references lack any teaching and fail to appreciate a construction in which the lower layer contains bi-component fibers having a denier of 4 to 10 dtex. Without being bound to any theory, it is believed that the addition of the higher denier bi-component fibers in the lower layer contribute to the strength and resiliency of the composite material without compromising softness or feel. Additionally, it is submitted that the construction as set forth in the present invention as defined in claim 6 contributes to the liquid transport capabilities of the composite material. Utilizing permanent hydrophilic fibers in the upper layer in combination with the lower layer defined herein permits introduction of liquid materials while maintaining their retention and preventing rewetting. Thus, it is submitted that the Appellants' invention as set forth in claim 6 is not taught, anticipated, or rendered obvious by Newkirk in view of Barge. It is

further submitted that claim 6 is improperly rejected under 35 U.S.C. § 103(a) as being unpatentable over these references.

VI. Claim 11 is improperly rejected under 35 U.S.C. § 103(a) as being unpatentable over Newkirk in view of Lloyd (US Statutory Invention Registration No. H1698).

The Appellants' invention as set forth in claim 11 is directed to the composite material previously defined in claims 1 and 10 in which the sheath/core fiber has a core positioned eccentrically to the longitudinal center of the fiber.

The Examiner indicates that Newkirk discloses the general invention but does not disclose that the lower layer contains eccentric core/sheath fibers. The Lloyd reference is cited as teaching that bi-component core/sheath fibers having an eccentric core are preferably used in absorbent articles to provide a low density structure due to the greater tendency of such structures to take on a curled shape (citing Lloyd, column 8, lines 2-7). The Examiner concludes that it would have been obvious to a person having ordinary skill in the art at the time the invention was made to use eccentric sheath/core fibers in the absorbent article of Newkirk in order to provide a lower density structure for acquiring and distributing liquids as taught by Lloyd et al.

The Appellants' invention as set forth in claim 11 is directed to a composite material in which bi-component fibers of the lower layer include PET as a higher melting point component positioned as a core in a sheath/core fiber. The core is positioned eccentrically to the longitudinal center direction of the fiber. While the Lloyd reference makes brief mention of eccentric bi-component fibers, the reference lacks any teaching or suggestion of a composite material in which a lower layer is made of such fibers, while an upper layer is differently configured. Additionally, the reference lacks any teaching or suggestion of bi-component fibers in a lower layer having a denier between 4 and 10 dtex.

The Appellants' invention is directed to a composite material in which two nonwoven material layers are joined by thermal processing. The upper layer is configured for physical contact with the body and is formed of a mixture of mono-component fibers and bi-component fibers. The percentage of bi-component fibers is 30 to 70 percent by weight of the upper layer. The denier of the fibers in the upper layer is *at most* 3.5 dtex.

It is submitted that the Lloyd reference fails to teach or suggest a composite material having at least two nonwoven layers joined by thermal processing. Furthermore, the reference fails to teach or suggest a composite material in which the lower layer includes at least 40 percent by weight sheath/core bi-component fibers having a higher melting component made of PET and a lower melting component that has a lower melting point than that of mono-component fibers in the upper layer. The core of the sheath/core fiber of the bi-component fibers of the lower layer is positioned eccentrically to the longitudinal direction of the fiber. The denier of these bi-component fibers in the lower layer is between 4 and 10 dtex. It is submitted that the Lloyd reference lacks any teaching of a composite two-layer material. Furthermore, the reference is silent regarding the specific balance of component materials employed in the respective upper and lower layers as set forth in the present invention. Additionally, the Lloyd reference fails to teach or appreciate the use of eccentric sheath/core fiber specifically in the lower layer.

The Newkirk reference has been discussed previously in detail in Sections I and III of this Appeal Brief. The reader is directed to those sections for detailed discussion of this reference. Briefly stated, the Newkirk reference fails to teach or suggest a dual layer material in which the upper or body contacting layer is formed of a mixture of mono-component fibers and bi-component fibers in which the percentage of bi-component fibers is 30 to 70 percent by weight of the upper layer. Furthermore, the Newkirk reference fails to teach or suggest that the bi-component fibers are sheath/core and are eccentrically positioned and have a lower melting component having a lower melting point than that of mono-component fibers present in the upper layer. Furthermore, the Newkirk reference fails to teach or suggest that the denier of the bi-component fibers of the lower layer is between 4 and 10 dtex. For these reasons, it is submitted

that the Appellants' invention as set forth in claim 11 is not taught, anticipated, or rendered obvious by the cited references and has been improperly rejected under the provisions of 35 U.S.C. § 103(a).

VII. Claim 11 is improperly rejected under 35 U.S.C. § 103(a) as being unpatentable over Barge et al. in view of Lloyd.

The invention set forth in claim 11 is discussed in Section **VI** of this Appeal Brief.

The Examiner contends that the barge reference discloses the cited structure but does not disclose that the lower layer contains eccentric core/sheath fibers. The Examiner cites the Lloyd reference as teaching that bi-component core/sheath fibers having an eccentric core are preferably used in absorbent articles to provide a lower density structure due to the greater tendency of such fibers to take on a curled shape (citing Column 8, lines 2-7). The Examiner concludes that it would have been obvious to a person having ordinary skill in the art at the time the invention was made to use the eccentric sheath/core fibers in the absorbent article of Barge in order to provide a lower density structure for acquiring and distributing liquids as taught by Lloyd et al.

The Barge reference has been discussed in detail in Sections II and V of this document. The Lloyd reference has been discussed in Section VII.

The Appellants' invention is directed to a composite material not taught or suggested in the Lloyd reference. Furthermore, the Lloyd reference is directed to a material that can be used in suitable hygiene particles. The composition disclosed in Lloyd fails to teach, suggest, or even appreciate the multilayer construction of the present invention. Specifically, the reference fails to teach or suggest that sheath/core fibers having eccentrically positioned cores can be carefully selected to have a denier between 4 and 10 dtex, and a lower melting point component that is lower than the melting point of mono-component fibers in an analogous upper layer. Such materials can be used in an amount of at least 40 percent in a lower layer to provide a

superior composite material to that suggested in Lloyd or the Barge reference. Furthermore, it is submitted that the Barge reference fails to teach or appreciate the use of such lower layer materials. For these reasons, and reasons discussed previously in conjunction with claims 1 and 10, it is submitted that the Appellants' invention as set forth in claim 11 is not taught, anticipated, or rendered obvious by the cited references. Furthermore, it is submitted that claim 11 is improperly rejected under 35 U.S.C. § 103(a) as being unpatentable over Barge in view of Lloyd.

VIII. Claims 16-19 are improperly rejected under 35 U.S.C. § 103(a) as being unpatentable over Newkirk in view of Hermann (DE 4,338,326).

The Appellants' invention as set forth in claim 16 is directed to an absorbent hygienic article having a fluid-tight layer that is not in physical contact with the body during use. The article includes a retaining element and a fluid permeable layer provided on the side of the retaining element in contact with the body. The retaining element comprises one layer of intralinked cellulose fibers with a fluid retention value that is derived from the quotients of mass of the fluid absorbed and the dry mass of the cellulose fibers and is between 0.6 and 0.9. The layer of intralinked cellulose fibers contains 8 to 15 percent by weight of superabsorbent polymer materials. The fluid permeable layer provided on the side of the retaining element in physical contact with the body is at least double-layered, with an upper layer of the double layers consisting of fibers with a denier of at most 3.5 dtex. The lower layer of the double layers comprises a bi-component fiber with a denier of between 4 and 10 dtex, whose higher melting component is made of PET.

The absorbent hygienic article can also include an additional layer of nonmeshed cellulose fibers having a quotient of mass of fluid absorbed to dry mass is between 1.0 and 4.0, and at least 20 percent by weight of super-absorbent polymer materials (claim 17). The additional layer of the retaining element can be disposed under the layer of intermeshed cellulose fibers (claim 18). The additional layer can have a layered area on the side not in physical contact with the body in use that is free of superabsorbent materials (claim 19).

The Examiner cites Newkirk as generally disclosing the present invention but indicates that it fails to disclose the structure for the absorbent core or retaining layer. The Hermann reference is cited as disclosing an absorbent core material having multiple layers. The Examiner contends that it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the absorbent core of Hermann et al. in the product of Newkirk in order to provide an absorbent product with sufficient acquisition and distribution properties as taught by the Hermann reference. (Citing English translation, page 3). With regard to claim 16, the Examiner contends that the upper layer 26 of Hermann is made of a cross-linked cellulose to provide distribution (citing English translation, page 6). The Hermann reference is cited as teaching the addition of superabsorbent material to the upper layer 26 (citing English translation, page 9), but does not disclose the amount. The Examiner indicates that the amount of superabsorbent material is a result effective variable that would effect the absorption of liquid properties in the distribution properties of the upper layer. The Examiner contends that the Herman reference recognizes this fact because the upper layer is designed to distribute liquid, whereas the lower layer is designed to store liquid and the presence of superabsorbent particles would decrease as one moves from the storage layer up to the distribution layer (citing English translation, page 7). The Examiner concludes that it would have been obvious to a person having ordinary skill in the art at the time the invention was made to use between 8 and 15 percent superabsorbent material in the upper layer in order to provide optimal absorbency and distribution of liquid, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

With regard to claim 17, the Examiner indicates that the Hermann reference teaches a lower layer 28 of conventional cellulose fibers and superabsorbent fibers being present in an amount between 10 and 98 percent by weight (citing English translation, page 7). With respect to the ratio of fiber mass to fluid storage limitations recited in claims 16 and 17, the Examiner contends that, although the Herman reference does not explicitly teach the ratio of fiber mass to fluid storage, it is reasonable to presume that the limitations are inherent in the invention.

The Examiner contends that support for this presumption is found in the use of similar materials (i.e. cellulose), and in the similar production steps (i.e., cross-linking for the upper layer and using conventional cellulose for the lower layer used to produce the absorbent core). In the alternative, the Examiner contends that adjusting the fluid absorption capabilities of the cellulosic fiber would be optimizing a result-effective variable. The Examiner contends that the Hermann reference specifically discloses that absorption capacity of the cellulose fibers of the upper layer 26 is lower than that of the cellulosic fibers of the lower layer 28 (citing English translation, page 4). The Examiner contends that it would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide the upper layer with fluid to fiber ratio of 0.6 to 0.9 and the lower layer with a fluid to fiber ratio of 0.1 to 0.4 since Hermann et al. discloses that the upper layer should have a smaller value than the lower layer. The Examiner contends that it would have been a matter of discovering optimum value of a result effective variable to ascertain such.

With regard to claim 18, the Examiner contends that layer 28 is disposed beneath layer 26 (see Fig. 1). With regard to claim 19, the Examiner contends that the Hermann reference discloses an additional lower layer 22 made of cellulosic fibers that may contain 0 percent absorbent material (citing English translation, page 5, and Fig. 1).

A. Claim 16 is patentable over Newkirk in view of Barge.

The Appellants' invention as set forth in claim 16 is directed to an absorbent hygienic article having a fluid-type layer not in physical contact with the body during use. The hygienic layer has a retaining element and a fluid-permeable layer provided on the side of the retaining element in physical contact with the body.

The retaining element includes one layer of intralinked cellulose fiber with a fluid retention value that is derived from the quotient of mass of the fluid absorbed and the dry mass of the cellulose fibers. The fluid retention value is between 0.6 and 0.9 g_{Fl} /g_{Fiber} The intralinked cellulose fibers contain 8 to 15 percent by weight of superabsorbent polymer materials in which

the fluid-permeable layer provided on the side of the retaining element in physical contact with the body is at least double layered. The upper layer of the double layers consists of fibers with a denier at most 3.5 dtex. The lower of the double layers comprises bi-component fibers where these bi-component fibers have a denier between 4 and 10 dtex and a higher melting component made of PET.

The Newkirk reference was discussed previously in Section I of this document. It is submitted that the Newkirk reference fails to teach, suggest, or appreciate the use of bi-component fibers having a specific denier between 4 and 10 in the lower of the two layers.

The Hermann reference discloses an absorbent body 16 positioned below a pervious nonwoven cover 14. As indicated in the Hermann reference, the absorbent body 16 comprises an upper side sheet 18 and a lower sheet positioned immediately below the upper side sheets that contact one another at boundary 20. The upper layer 26 comprises an upper sublayer 26 and a lower sublayer 28. The upper sublayer consists of intralinked cellulose fibers. It can be appreciated that such cellulose fibers do not provide for storage of liquid. The liquid is received within capillaries between the fibers and is distributed within the sublayer 26. The upper sublayer 26 is referred to as the distribution layer. The lower sublayer 28 comprises regular noncross-linked cellulose fibers selected to exhibit a substantially higher absorption than the intracross-linked cellulose fibers. The lower sublayer 28 comprises a superabsorbent material in the form of particles. The content of the superabsorbent material in lower sublayer 28 is between 10 and 98 weight percent. The content of superabsorbent material is preferably between 30 and 50 weight percent. Lower layer 22 consists essentially of noncross-linked cellulose fibers.

It is the Examiner's position that each layer, 18, 20, 22, or sublayers 26, 28 can comprise additions such as superabsorbent material, binder, synthetic fibers, thermoplastic fibers, or bi-component fibers. It is submitted that the Hermann reference discloses a specific absorbent body having a layer construction with the upper sublayer consisting of 100 percent intracross-linked cellulose fibers exhibiting resilience and good absorption and distribution properties. The upper sublayer 26 is, therefore, an acquisition and distribution layer or, a fluid-handling layer.

Given this, the Hermann construction requires only a nonwoven cover that can be very thin given the construction of sublayer 26.

The Hermann reference lacks any teaching or suggestion of a nonwoven cover having composite structure. It is submitted that the Hermann reference directs the skilled artisan away from the need or desire to use a composite structure in a body-contacting cover layer. The structure disclosed in Hermann positions the majority of superabsorbent particles in lower layer 28. Uper sublayer 26 and transition zone 30 are interposed between lower layer 28 and the simple nonwoven 18 disclosed in Hermann. Given the specific absorbent body disclosed in Hermann for providing acquisition and distribution properties, there is no need to additionally adopt a composite top sheet. Thus, the Hermann reference provides no motivation for combining the teaching found therein with that disclosed in the Newkirk reference.

The Newkirk reference lacks any teaching or suggestion of a hygienic article utilizing the double-layered cover of claim 16 overlying cellulose fibers containing superabsorbent particles. The Newkirk reference is directed toward the problems of perceived surface dryness and softness of a nonwoven fabric. The reference lacks sufficient teaching or disclosure to provide motivation for combination with the Hermann reference.

Furthermore, it is submitted that the combination of the Newkirk and Hermann references does not teach or suggest an absorbent hygienic article in which the upper layer consists of fibers with a denier of at most 3.5 dtex, while the lower of the double layers comprises bi-component fibers having a denier between 4 and 10 dtex, having a higher melting component made of PET. It is further submitted that the performance and configuration of the Appellants' invention as set forth in claim 16 cannot be derived from a combination of the teachings of the Newkirk and Hermann references without the benefit of the Appellants' disclosure to permit the selection of various elements in the respective references. Thus, the Appellants' invention as set forth in claim 16 is not taught, anticipated, or rendered obvious by the cited references. It is submitted that the invention set forth in claim 16 is improperly rejected under 35 U.S.C. § 103(a).

B. Claims 17, 18, and 19 are patentable over Newkirk in view of Hermann.

Claims 17, 18, and 19 currently stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Newkirk in view of Hermann. Claims 17, 18, and 19 depend either directly or indirectly from claim 16 to contain all of the limitations found therein. By this dependency, it is submitted that the Appellants' invention as set forth in these claims is not taught, anticipated, or rendered obvious by the cited references for the reasons discussed previously in conjunction with claim 16. Furthermore, it is submitted that claims 17, 18, and 19 are improperly rejected under 35 U.S.C. § 103(a) in view of this dependency. Reversal is requested.

IX. Claims 16-19 are improperly rejected under 35 U.S.C. § 103(a) as being unpatentable over Barge in view of Hermann.

The discussion of the claimed subject matter is set forth in Section **VIII**.

The discussion of the limitations purportedly disclosed by the Barge reference is set forth in Section **II**. The Examiner's discussion regarding the Hermann reference is set forth in Section **VIII**.

Briefly stated, the Barge reference lacks any teaching or discussion of the composite material defined in claim 16. As previously discussed, the Barge reference is directed to a composite material in which the fineness of fibers in both webs is similar and where the bi-componenet fibers in the lower layer have a dtex between 4 and 10. The Hermann reference lacks any teaching or suggestion of the retaining element in physical contact with the body having a double layer structure in which the upper of the double layers consists of fibers with a denier of at most 3.5 dtex, while the lower of the double layers comprises bi-component fibers with a denier between 4 and 10 dtex, in which the higher melting component is made of PET. The Hermann reference, at best, discloses an absorbent body containing cellulose fibers. It is submitted that the combined references fail to teach or suggest the invention disclosed and claimed in claims 16-19.

CONCLUSION

For the reasons stated above, it is respectfully submitted that Appellants' invention as set forth in claims 1-19 is not taught, anticipated, or rendered obvious by the cited reference and is in a condition suitable for allowance. Reversal of the present rejection is requested..

No oral hearing is requested.

Appellants' attorney's check in the amount of $340.00 is enclosed to cover the Appeal Brief filing fee.

Respectfully submitted,

YOUNG & BASILE, P.C.

Denise M. Glassmeyer
Attorney for Applicant(s)
Registration No. 31831
(248) 649-3333
(248) 649-3338 (fax)
glassmeyer@ybpc.com

3001 West Big Beaver Road, Ste 624
Troy, Michigan 48084-3107

Dated: December 7, 2004
DMG/ljo

CLAIMS APPENDIX

1. (Previously Presented) A composite material for producing a layer of a disposable absorbent hygienic article that comes into physical contact with the body, made of at least two nonwoven material layers joined by thermal processing, where the upper layer for physical contact with the body is formed of a mixture of mono-component fibers and bi-component fibers and the percentage of bi-component fibers amounts to 30 - 70 % by weight of the upper layer, and where the denier of the fibers of the upper layer is at most 3.5 dtex, and where the lower layer includes at least 40 % by weight of bi-component fibers whose higher melting component is made of PET and whose lower melting component has a lower melting point than that of the mono-component fibers of the upper layer, and where the denier of the bi-component fibers of the lower layer is between 4 and 10 dtex.

2. (Previously Presented) The composite material in accordance with claim 1, characterized in that the upper layer for physical contact with the body has a textured pattern created by calendering, where the percentage of the textured surface comprises 5 to 30 % of the total surface.

3. (Previously Presented) The composite material in accordance with claim 2, wherein the percentage of the textured surface comprises 15 to 25 % of the total surface.

4. (Previously Presented) The composite material in accordance with claim 1, wherein the surface weight of the upper layer is about 10 to 30 g/m^2.

5. (Previously Presented) The composite material in accordance with claim 4, wherein the surface weight of the upper layer is about 15 to 20 g/m^2.

6. (Previously Presented) The composite material in accordance with claim 1,

wherein the fibers of the upper layer are one of hydrophilic and made supple to be permanently hydrophilic.

7. (Previously Presented) The composite material in accordance with claim 1, wherein the lower layer comprises at least 60 % by weight bi-component fibers whose higher melting component is made of PET.

8. (Previously Presented) The composite material in accordance with claim 7, wherein the lower layer comprises at least 80 % by weight bi-component fibers whose higher melting component is made of PET.

9. (Previously Presented) The composite material in accordance with claim 8, wherein the lower layer consists of 100 % of bi-component fibers whose higher melting component is made of PET.

10. (Previously Presented) The composite material in accordance with claim 1, wherein the bi-component fibers of the lower layer with PET as higher melting component is a sheath/core fiber.

11. (Previously Presented) The composite material in accordance with claim 10, wherein the sheath/core fiber has a core positioned eccentrically to the longitudinal center direction of the fiber.

12. (Previously Presented) The composite material in accordance with claim 11, wherein the denier of the sheath/core fiber is 5 to 8 dtex.

13.(Previously Presented) The composite material in accordance with claim 12, wherein the denier of the sheath/core fiber is 6 to 7 dtex.

14. (Previously Presented) The composite material in accordance with claim 1, wherein the lower melting component of the bi-component fiber present at least 40 % by weight in the lower layer is made of polyethylene.

15. (Previously Presented) An absorbent hygienic article with a fluid-tight layer not in physical contact with a body during use, a retaining element and a fluid-permeable layer furnished on a side of the retaining element in physical contact with the body, wherein the layer furnished on the fluid-permeable side of the retaining element in physical contact with the body comprises a composite material in accordance with claim 1.

16. (Previously Presented) An absorbent hygienic article having a

fluid-tight layer not in physical contact with the body during use, a retaining element and a fluid-permeable layer provided on the side of the retaining element in physical contact with the body, where the retaining element comprises one layer of intralinked cellulose fibers with a fluid retention value which is derived from the quotients of the mass (g_{Fl}) of the fluid absorbed and the dry mass (g_{Fiber}) of the cellulose fibers and is between 0.6 and 0.9 g_{Fl}/g_{Fiber}, wherein the layer of intralinked cellulose fibers contains 8 - 15 % by weight of superabsorbent polymer materials, where the fluid-permeable layer provided on the side of the retaining element in physical contact with the body is at least double-layered and an upper of the double layers consists of fibers with a denier of at most 3.5 dtex, while a lower of the double layers comprises bi-component fibers with a denier between 4 and 10 dtex whose higher melting component is made of PET.

17. (Previously Presented) The absorbent hygienic article in accordance with claim 16, wherein the retaining element has in addition a layer of nonmeshed cellulose fibers with a fluid retention value which is made up of the quotients of the mass (g_{Fl}) of the fluid absorbed and the dry mass (g_{Fiber}) of the cellulose fibers and is between 1.0 and 1.4 g_{Fl}/g_{Fiber} and at least 20 % by weight of superabsorbent polymer materials.

18. (Previously Presented) The absorbent hygienic article in accordance with claim 17, wherein the additional layer of the retaining element is disposed under the layer of intrameshed cellulose fibers.

19. (Previously Presented) The absorbent hygienic article in accordance with claim 18, wherein the additional layer has a layered area on the side not in physical contact with the body in use which is free of superabsorbent materials.

Claim 20 (canceled).